and tissues, and thus retards the development of arteriosclerosis. As yet the exclusion of foods rich in cholesterol from the diet has not been advocated, since there are so many such foods and since cholesterol is too valuable a compound of the body cells to be treated in such a cavalier fashion.

The final section of this thoughtful paper discusses the treatment of diabetes and is written in the most characteristic, epigrammatic style for which Joslin is adept. The opening sentences are so forcible and impressive that I cannot do better than to quote them verbatim. "If a diabetic has known enough to live ten years, be sure you know enough to make him live another ten years before you tamper with his diet. The arteries of the young diabetic are elastic and his diabetes is so pliable and amenable to all types of treatment that you can toss him about in your diabetic salon like a rubber doll. Not so the old diabetic. His arteries are thickened and sometimes hard, and his status must be changed as delicately as you would move a choice piece of bric-a-brac. If you wish to keep a few examples of this arteriosclerotic, diabetic bric-a-brac for your son to treat, be cautious. Be guided by my experience in the early part of this century, when with youthful enthusiasm I suddenly reduced the blood sugar of a cherished Commonwealth Avenue diabetic patient, Case No. 11, who at infrequent intervals had mild attacks of angina pectoris. In the early hours of the morning I was called to her untimely death bed. And that other diabetic in 1922, Case No. 705, should be mentioned who also was found dead a few days after I reduced his blood sugar with diet and insulin." Joslin then goes on to state that the rapid reduction of the blood sugar level in elderly diabetics may be disastrous through its effect on a diseased myocardium that is already poorly nourished by sclerotic coronary arteries. In patients with a high blood pressure and a lowering of the sugar tolerance, a hyperglycemia may exist as a compensatory process to supply the requirements of a malnourished heart. Hyperglycemia must not, therefore, be regarded from the diabetic standpoint alone, but from that of the needs of the entire body. In the elderly patient surely avoid any tendency toward hypoglycemia.

ERNEST S. DU BRAY,
San Francisco.

Gastro-Intestinal Disorders

Gastro-Intestinal X-Ray—I find that in commercial x-ray laboratories and in hospital x-ray departments as well, there is a tendency for the general practitioner to refer gastro-intestinal patients with a request for "x-ray examination of the stomach only."

This failure to make complete and thorough examination of the whole tract is a serious and vital mistake. It results in loss of prestige to the physician and disappointment to the patient. The chances of error are high enough without increasing them in this manner.

The reasons for this error arise in a desire to please the patient who wishes to save expense. A patient cannot be expected to understand the reason for "examining any other spot than where the pain is." Whether it is true or not, let us credit the doctor with understanding the reasons. It is easier to feel that he understands, but allows himself to be persuaded to do what the patient wishes because some other clinician or laboratory has done the same thing.

The stomach is the seat of pain referred from many areas in the abdomen. The vegetative nervous system is capable of referring painful sensations either up or down in the spine, and that the stomach or epigastrium is the seat of pain or distress, is no reason that the pathological etiology is located there. Gastric diseases are rare; intestinal diseases are very common, relatively speaking, and when there are gastro-intestinal symptoms we need an intelligent search for the reason, not a simple looking to the spot where the reflex has placed the pain or symptom. This is, of course, true of the entire examination, but we are now speaking of x-ray examination particularly.

The intestines are not the only organ that refer symptoms to the stomach; others are the rectum, the appendix, and the gall bladder.

X-ray apparatus has been developed to a point of great perfection and facility of operation. Our commercial concerns are out to sell this apparatus, and men have installed x-ray equipment who, after having been taught the technical side of the work, are not in any way qualified to interpret the findings. The patient cannot be expected to understand and discriminate in this matter intelligently. I hope for the day when there will be some regulation from "within the party." We need organization in general medicine similar to that in general surgery. I am sure the general practitioner, and laboratory worker as well, would do well to examine the patient completely and to the best of his ability or not at all. If the patient cannot pay, it would be economy in the long run to adjust the price to the patient, or do the work gratuitously.

R. MANNING CLARKE,
Los Angeles.

Orthopedics

Fusion Operations on the Spinal Column—The joints of the spinal column are major weight-bearing joints, and when so severely distorted by injury or disease that useful motion is no longer to be expected, should be arthrodesed by callus or by fusion operation.

It is two decades since Albee, Hibbs and others pioneered the field of operation, but only within the last ten years has spinal fusion been widely accepted. Such operations are today generally recognized as a most valuable means of promoting and hastening recovery both in tuberculosis and after severe fractures of the spine.

The insertion of a single tibial graft in a cleft in the split spinous processes (Albee's operation) has the advantage of simplicity and preserves the

mechanical leverage of the spinous processes. It does not so well insure a strong and permanent fusion as the Hibb's operation, which directly obliterates the zygapophyseal articulations, lays down two lateral bridges of laminal shavings and a central bridge formed of the broken-down spinous processes. This operation is a rather tedious procedure and destroys the mechanical leverage of the spinous processes.

For many years Hunkin has used tibial grafts placed upon the denuded laminae against the bases of the spinous processes on either side. This operation often produces good results, but provides only an uncertain contact of the surfaces of the grafts with the irregular surfaces of the laminae and spinous processes, and does not directly block the zygapophyseal articulations.

Magnusen bolts the spinous processes together with ivory screws and plates. This foreign body fixation, although it undoubtedly secures immediate temporary immobilization, probably does not often result in strong or permanent fusion. Metal plates used in a similar way by some European surgeons are even less commendable.

Grantham (*Journal of Bone and Joint Surgery*, October, 1927), describes a method of fusion by insertion of a tibial graft in a tunnel, made at the base of the spinous processes with a special grooved osteotome. This would appear to be a rather dangerous resort to "blind" surgery and of limited application.

In CALIFORNIA AND WESTERN MEDICINE, May, 1924, the writer described a method of fusion by double tibial grafts sawed to shape and placed deeply within the cancellous bone of the split laminae in such way as directly to block the zygapophyseal articulations. At either end of the fused area portions of the spinous processes are left *in situ*, thus preserving the mechanical leverage of the spines. This method requires rather tedious technique, but insures a strong and early fusion.

Operation should be limited to the fusion of the damaged segment or segments to each other and to one unimpaired segment above and below. The extension of the fusion to include further undamaged joints is a needless sacrifice of function and tends only to weaken the center of the fused area because of the increased leverage upon it exerted by the longer rigid elements above and below.

Rest in recumbency and mechanical support during early ambulatory convalescence are just as essential after fusion operation as in the so-called conservative treatment without operation. Fusion only hastens and improves the degree of recovery when it is used in conjunction with and not to supplant other rational measures of treatment.

E. W. CLEARY,
San Francisco.

Ophthalmology

Iritis—There are two diseases that might be confused with an acute iritis, namely, acute conjunctivitis and acute inflammatory glaucoma, and these two diseases must be eliminated before treatment of iritis can be given.

In an acute conjunctivitis there is no actual pain, except a photophobia and a feeling as if sand was in the eye. The pupil reacts to light. The lids stick together, especially in the mornings; and secretion can be seen in the conjunctival sac. If in doubt, it will do no harm to use one drop of a 2 per cent homatropin to see if the pupil dilates evenly.

An acute inflammatory glaucoma generally affects a person of middle age or past. It comes on suddenly with a severe pain in the eye, and is generally severe enough to produce vomiting. The cornea rapidly becomes hazy and insensitive. The pupil is dilated and immovable. The anterior chamber is shallow. The vision is rapidly cut down to perception of shadows.

Iritis is an acute inflammation of the iris and ciliary body. There is increased photophobia and lacrimation, but no pus. The pupil is small, the cornea clear, and the anterior chamber is of normal depth. There is a circumcorneal injection fading toward the fornix. The pain radiates to the temple of the affected side and is worse at night. If homatropin is used the pupil dilates irregularly, due to adhesions to the capsule of the lens.

Iritis is a local manifestation of a constitutional condition. There is a focus of infection somewhere that has to be located, and this focus can be found in practically every case if search is thorough enough. Brown and Irons[1] in their series of two hundred cases found syphilis alone caused twelve, gonococcal infections eight, tuberculosis eight, dental infections twelve, tonsillar infections twenty-six, sinus infections one, genito-urinary without venereal infection six, and other infections three.

After finding and eliminating the cause, active treatment to the eye must be instituted and kept up until all danger of adherence of the iris to the anterior capsule of the lens has passed. Atropin in a 1 or 2 per cent solution instilled into the conjunctival sac three times a day will usually break up recent adhesions and keep the iris free. In the event that these adhesions will not tear loose, then with the patient in a reclining position, a 4 per cent cocain solution is instilled three or four times; a speculum is introduced; the bulbar conjunctiva is grasped with a small fixation forceps and a subconjunctival injection of three minims of 4 per cent cocain combined with 7 minims of adrenalin is done. This will usually free the adhesions, or at least a part of them. A few days later this may be repeated until all adhesions are freed. After the injection is made the patient should be kept in a reclining position and warned that his heart

1. Brown and Irons: The Etiology of Iritis. Transactions of Section on Ophthalmology, A. M. A., 1923.